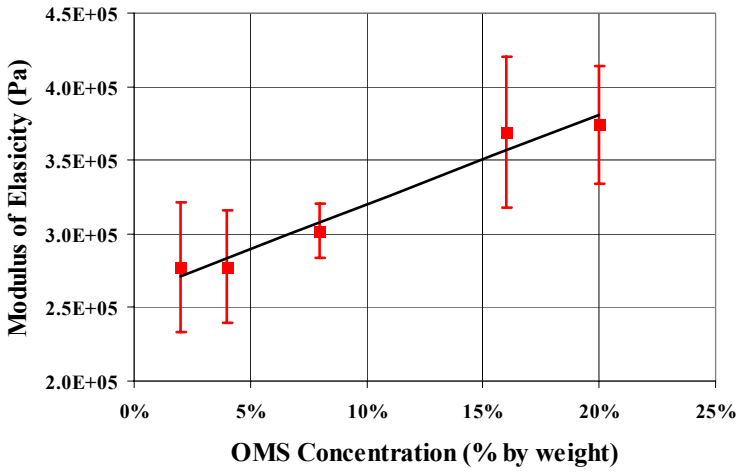
Polymer-Based Nanocomposites: An Opportunity for Deaf and Hard of Hearing Students

Peggy Cebe, Tufts University, DMR-0406127

Nanocomposites are mixtures of two or more components, in which at least one of them has dimensions on the nanometer length scale. In this program, polymer nanocomposites are made by adding tiny particulates to thermoplastic polymers. The particulates are organically modified silicates (OMS), a special type of clay that is treated to enhance its interaction with the polymer host. It is anticipated that this will lead to improvement in the mechanical properties of the polymer-based nanocomposite compared to the unfilled polymer.



Four deaf or hard of hearing undergraduate student interns performed the research reported here. The nanocomposites were made by mixing poly(vinylidene fluoride) with Lucentite™ OMS. Students used compression molding to form films, then tested their mechanical properties in tension. The figure shows that the elastic modulus (Young's modulus) systematically increases as a function of increasing content of OMS.

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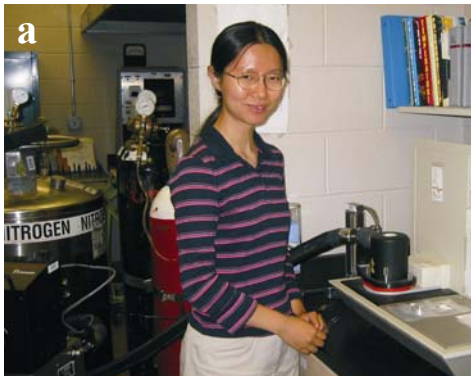
Education and Outreach to the Deaf and Hard of Hearing



Four deaf or hard of hearing students were accepted into the first class of interns, and spent six weeks at Tufts University, learning polymer physics and chemistry in the classroom, and performing research in the laboratory of Prof. Peggy Cebe. Students came from Rochester Institute of Technology (RIT) and Galluadet University (GU). a.) Jingjing Pan (RIT) loads a DSC cell. b.) First row L-R: Interns Matthew Jenkins (RIT), Jingjing Pan (RIT), Niesha Washington (GU), and Jennifer Buckley (RIT); Prof. Peggy Cebe. Second row: Dan Cherdack, teaching assistant; Diane McKeon, interpreter; Profs. Terry Hass and Regina Valluzzi, course instructors; Mark Riley, interpreter. The first row is signing: I love–PO-LY-ME-RS. c.) Niesha Washington (GU) prepares samples for annealing. d.) Matt Jenkins (RIT) at the hydraulic press.